

IN THE CLAIMS:

Please cancel claims 1-28, and add the following new claims.

1-28 (Cancelled)

29. (New) A method for creating a prototype for performing a machine vision process to solve a machine vision problem, the method comprising:

displaying information indicating a plurality of machine vision problems;

receiving user input selecting a machine vision problem from the plurality of machine vision problems; and

automatically creating a prototype including a plurality of elements in response to the selected machine vision problem, wherein the plurality of elements are operable to interact in order to perform a machine vision process that solves the selected machine vision problem.

30. (New) The method of claim 29, wherein the plurality of machine vision problems comprise one or more machine vision problems associated with at least one of the categories from the group consisting of:

image processing, image analysis, industrial automation, test and measurement, and robotics.

31. (New) The method of claim 29, wherein said displaying information indicating a plurality of machine vision problems comprises displaying the plurality of machine vision problems categorized by one or more of color, shape, and pattern.

32. (New) The method of claim 29, wherein the machine vision process comprises one or more image processing functions, comprising one or more of:

one or more filtering functions for smoothing, edge detection, and/or convolution;

one or more morphology functions for modifying the shape of objects in an image, including erosion, dilation, opening, and/or closing;

one or more thresholding functions for selecting and/or converting ranges of pixel values in images; and

one or more particle filtering functions to filter objects based on shape measurements.

33. (New) The method of claim 29, wherein the machine vision process comprises one or more image analysis functions, comprising one or more of:

a histogram function that counts and graphs a total number of pixels in each grayscale value;

a line profile function that returns grayscale values of pixels along a line drawn through an image with a line tool and graphs the values;

one or more particle analysis functions that computes measurements on objects in an image; and

a 3D view function that displays an image using an isometric view in which each pixel from an image source is represented as a column of pixels in a 3D view, wherein the pixel value corresponds to an altitude of the column of pixels.

34. (New) The method of claim 29, wherein the machine vision process comprises one or more machine vision functions, comprising one or more of:

an edge detection function that finds edges along a line drawn through an image with a line tool;

a blob analysis function;

a pattern matching function that locates regions of a grayscale image that match a predetermined template;

a shape matching function that searches for the presence of a shape in an image and specifies the location of each matching shape;

a caliper function that computes measurements, including distances, areas, and/or angles, based on results returned from other image processing functions; and

a color matching function that quantifies which colors and how much of each color exist in a region of an image and uses this information to determine if another image contains the same colors in a substantially equal ratio.

35. (New) The method of claim 29,
wherein said automatically creating the prototype comprises using previously stored information specifying the elements to include in the prototype.

36. (New) The method of claim 35, wherein said automatically creating includes selecting the prototype from a plurality of stored prototypes, wherein the selected prototype corresponds to the selected machine vision problem.

37. (New) The method of claim 29,
wherein each element included in the prototype is a step representing a function.

38. (New) The method of claim 37, wherein an ordering is associated with the steps in the prototype, the method further comprising:

performing the functions in the order of their respective corresponding steps in order to perform the machine vision process that solves the machine vision problem.

39. (New) The method of claim 29, further comprising:
receiving user input to customize the machine vision process that is performed;
and

modifying the prototype in response to the user input;

wherein said modifying the prototype comprises one or more of:

modifying an element in the prototype;

including another element in the prototype;

removing an element from the prototype.

40. (New) The method of claim 29, further comprising:
displaying help information regarding the selected machine vision problem;
wherein the help information includes information explaining the machine vision process that is performed in order to solve the selected machine vision problem.

41. (New) The method of claim 29, further comprising:
receiving information regarding an additional machine vision problem to indicate in the plurality of machine vision problems, wherein the information specifies a plurality of elements to include in a prototype in response to a user specifying the additional machine vision problem;

displaying information indicating the additional machine vision problem along with the other machine vision problems in the plurality of machine vision problems.

42. (New) The method of claim 41,
wherein said receiving information regarding the additional machine vision problem comprises automatically receiving the information, without user input.

43. (New) The method of claim 41, wherein said receiving information regarding the additional machine vision problem comprises:

connecting to a computer server;
downloading the information from the computer server.

44. (New) The method of claim 29, further comprising:
programmatically generating a program executable to implement the machine vision process performed by the prototype.

45. (New) The method of claim 44,
wherein the program is a graphical program.

46. (New) The method of claim 29, further comprising:
programmatically generating a script, wherein the script is executable to generate a program implementing the machine vision process performed by the prototype.

47. (New) The method of claim 29, wherein the prototype comprises an object-oriented representation of the machine vision process, and wherein the elements comprise objects representing respective machine vision operations.

48. (New) The method of claim 29, wherein the prototype comprises a diagrammatic representation of the machine vision process, and wherein the elements comprise diagrammatic objects representing respective machine vision operations.

49. (New) A method for extending the functionality of a machine vision prototyping environment application, the method comprising:

installing a machine vision prototyping environment application operable to automatically create a plurality of machine vision prototypes, wherein each of the plurality of machine vision prototypes is configured to perform a machine vision process to solve a particular machine vision problem;

receiving machine vision solution information after said installing, wherein the machine vision solution information includes information enabling the machine vision prototyping environment application to automatically create a new machine vision prototype;

providing user input requesting the machine vision prototyping environment application to automatically create the new machine vision prototype using the machine vision solution information, wherein the new machine vision prototype is configured to perform a machine vision process to solve a new machine vision problem.

50. (New) The method of claim 49, wherein the machine vision prototyping environment application is distributed by a first software developer, the method further comprising:

transferring specification information from the first software developer to a second software developer, wherein the specification information specifies how to construct machine vision solution information for the machine vision prototyping environment application;

constructing machine vision solution information according to the specification information in response to user input from the second software developer, wherein the

machine vision solution information enables the machine vision prototyping environment application to automatically create a new machine vision prototype;

wherein said receiving machine vision solution information comprises receiving the machine vision solution information constructed by the second software developer.

51. (New) The method of claim 49, wherein the machine vision prototyping environment application is distributed by a software developer, the method further comprising:

providing information indicating a new machine vision problem to the software developer;

requesting the software developer to provide machine vision solution information enabling the machine vision prototyping environment application to automatically create a new machine vision prototype configured to perform a machine vision process to solve the new machine vision problem;

receiving machine vision solution information from the software developer enabling the machine vision prototyping environment application to automatically create a new machine vision prototype configured to perform a machine vision process to solve the new machine vision problem.

52. (New) The method of claim 51, further comprising:

receiving help information from the software developer explaining the machine vision process that is performed in order to solve the new machine vision problem.

53. (New) A method for creating an image processing prototype for performing a process to solve an image processing problem, the method comprising:

displaying information indicating a plurality of image processing problems;

receiving user input selecting an image processing problem from the plurality of image processing problems; and

automatically including a plurality of elements in the image processing prototype in response to the selected image processing problem, wherein the plurality of elements

are operable to interact in order to perform a process that solves the selected image processing problem.

54. (New) A system for creating a machine vision prototype for performing a machine vision process to solve a machine vision problem, the system comprising:

a processor;

a memory coupled to the processor;

a machine vision prototyping environment application stored in the memory, wherein the machine vision prototyping environment application is operable to:

display information indicating a plurality of machine vision problems;

receive user input selecting a machine vision problem from the plurality of machine vision problems; and

automatically create a machine vision prototype including a plurality of elements in response to the selected machine vision problem, wherein the plurality of elements are operable to interact in order to perform a machine vision process that solves the selected machine vision problem.

55. (New) The system of claim 54, wherein the machine vision prototyping environment application is further operable to:

receive information regarding an additional machine vision problem to indicate in the plurality of machine vision problems, wherein the information specifies a plurality of elements to include in a machine vision prototype in response to a user specifying the additional machine vision problem;

display information indicating the additional machine vision problem along with the other machine vision problems in the plurality of machine vision problems.

56. (New) The system of claim 55, wherein the memory and the processor are associated with a first computer system, the system further comprising:

a second computer system connected to the first computer system via a network;

wherein said receiving information regarding the additional machine vision problem comprises:

establishing a network connection with the second computer system;
downloading the information via the network connection.

57. (New) A memory medium comprising program instructions executable to:

display information indicating a plurality of machine vision problems;

receive user input selecting a machine vision problem from the plurality of machine vision problems; and

automatically create a machine vision prototype including a plurality of elements in response to the selected machine vision problem, wherein the plurality of elements are operable to interact in order to perform a process that solves the selected machine vision problem.

58. (New) The memory medium of claim 57,

wherein said creating the machine vision prototype comprises using previously stored information specifying the elements to include in the machine vision prototype.

59. (New) The memory medium of claim 57,

wherein each element included in the machine vision prototype is a step representing a machine vision function.

60. (New) The memory medium of claim 59, wherein an ordering is associated with the steps in the machine vision prototype, the memory medium further comprising program instructions executable to:

perform the machine vision functions in the order of their respective corresponding steps in order to perform the machine vision process that solves the machine vision problem.

61. (New) The memory medium of claim 57, further comprising program instructions executable to:

receive information regarding an additional machine vision problem to indicate in the plurality of machine vision problems, wherein the information specifies a plurality of elements to include in a machine vision prototype in response to a user specifying the additional machine vision problem;

display information indicating the additional machine vision problem along with the other machine vision problems in the plurality of machine vision problems.

62. (New) A system for creating a machine vision prototype for performing a machine vision process to solve a machine vision problem, the system comprising:

a client computer system, wherein the client computer system comprises:

a processor;

a memory coupled to the processor;

a machine vision prototyping environment application stored in the memory, wherein the machine vision prototyping environment application is operable to:

display information indicating a plurality of machine vision problems;

receive user input selecting a machine vision problem from the plurality of machine vision problems; and

select a first machine vision prototype from a plurality of possible machine vision prototypes, wherein the first machine vision prototype implements a solution to the selected machine vision problem; and

a server computer system, wherein the server computer system stores a plurality of machine vision prototypes;

wherein the client computer system is operable to obtain machine vision prototypes from the server computer system.

63. (New) The system of claim 62,

wherein the server computer system is operable to receive and store machine vision prototypes from a plurality of client computer systems.